

CLAIMS

What is claimed is:

1. An insertion tool for use in inserting an electrode system into a cochlea of a user, the electrode system comprising a cochlear electrode array and a positioner, the cochlear electrode array and the positioner being joined together near their respective distal ends but not joined anywhere else, the positioner comprising an elongate flexible member having a longitudinal lumen passing therethrough, the longitudinal lumen being closed at its distal end, the insertion tool comprising:

a hand-held implantation tool having a body and a barrel, wherein the body has the approximate size and shape of a pen or pencil;

a protruding, extendable and retractable stylet wire passing through the barrel;

a slidable tab along one edge of the body of the tool, the tab being connected to the stylet wire, wherein imparting a sliding movement to the tab causes the stylet wire to extend out of the barrel or retract into the barrel;

wherein the lumen of the positioner is adapted to be threaded onto the stylet wire prior to inserting the electrode array and positioner into the cochlea, and wherein the stylet wire is extended as the positioner is inserted into a cochlea, which insertion carries both the positioner and electrode array deeper into the cochlea, and wherein the stylet wire is retracted from the positioner once the positioner and electrode array have been inserted to a desired depth within the cochlea.

2. The insertion tool of Claim 1 further including a guiding tube adapted to fit snugly on a distal tip of the barrel, the guiding tube having a distal end adapted to hold a proximal end of the positioner and a proximal end of the electrode array in a parallel relationship as the insertion of the electrode array and positioner into the cochlea commences.

3. The insertion tool of Claim 2 wherein the electrode array includes an offset portion at its proximal end where a lead attaches to the electrode array.

4. The insertion tool of Claim 3 wherein the guiding tube includes a slot along one edge thereof adapted to receive the offset portion of the electrode array.

5. The insertion tool of Claim 4 wherein the slot of the guiding tube holds the offset portion of the electrode array for the first 2-4mm of insertion of the positioner and electrode array away into the cochlea.

6. The insertion tool of Claim 2 wherein the barrel of the insertion tool includes a bend in order to facilitate guiding the stylet wire into a left or right cochlea.

7. The insertion tool of Claim 6 wherein the barrel of the insertion tool is attached to the body of the insertion tool through a swivel connection, wherein the barrel may be rotated by way of the swivel connection relative to the body of the insertion tool in order to facilitate insertions of the stylet wire, with the positioner threaded thereon and electrode array attached thereto, into either a left or a right cochlea.

8. An insertion tool for use in inserting an electrode into a cochlea of a user, the electrode comprising a cochlear electrode array formed on an elongate flexible member having a longitudinal lumen passing therethrough, the longitudinal lumen being closed at its distal end, the insertion tool comprising:

a hand-held implantation tool having a body and a barrel, wherein the body has the approximate size and shape of a pen or pencil;

a protruding, extendable and retractable stylet wire passing through the barrel;

a slidable tab along one edge of the body of the tool, the tab being connected to the stylet wire, wherein imparting a sliding movement to the tab causes the stylet wire to extend out of the barrel or retract into the barrel;

wherein the lumen of the electrode array is adapted to be threaded onto the stylet wire prior to inserting the electrode array into the cochlea, and wherein the stylet wire is extended as the electrode array is inserted into a cochlea, and wherein the stylet wire is retracted from the electrode array once the electrode array has been inserted to a desired depth within the cochlea.

9. The insertion tool of Claim 8 further including a guiding tube adapted to fit snugly on a distal tip of the barrel, the guiding tube having a distal end adapted to hold a proximal end of the electrode array as the insertion of the electrode array into the cochlea commences.

10. The insertion tool of Claim 9 wherein the electrode array includes an offset portion at its proximal end where a lead attaches to the electrode array.

11. The insertion tool of Claim 10 wherein the guiding tube includes a slot along one edge thereof adapted to receive the offset portion of the electrode array.

12. The insertion tool of Claim 11 wherein the slot of the guiding tube holds the offset portion of the electrode array for the first 2-4mm of insertion of the electrode array away into the cochlea.

13. The insertion tool of Claim 9 wherein the barrel of the insertion tool includes a bend in order to facilitate guiding the stylet wire into a left or right cochlea.

14. The insertion tool of Claim 13 wherein the barrel of the insertion tool is attached to the body of the insertion tool through a swivel connection, wherein the barrel may be rotated by way of the swivel connection relative to the body of the insertion tool in order to facilitate insertions of the stylet wire, with the electrode array threaded thereon, into either a left or a right cochlea.

15. A method for inserting a cochlear electrode into the cochlea of a patient, the cochlear electrode comprising a cochlear electrode array formed on an elongate flexible member having a longitudinal lumen passing therethrough, the lumen channel being closed at its distal end; the method comprising:

- (a) inserting the electrode array into a sheath;
- (b) while holding the sheath in one hand, inserting a flexible stylet wire into the lumen of the cochlear electrode until a distal tip of the stylet wire engages the closed distal end of the lumen channel;

- (c) while holding the stylet wire, removing the sheath from the electrode array,
- (d) positioning a distal end of the cochlear electrode within an opening of the cochlea so that the electrode array is closest to a modiolar wall of the cochlea;
- (e) extending the stylet wire forward a prescribed distance, thereby pushing the cochlear electrode into the cochlea a distance equal to the prescribed distance; and
- (f) removing the stylet wire.

16. The method of Claim 15 further including
 - guiding the stylet wire through a guiding tube prior to inserting it into the lumen of the cochlear electrode;
 - inserting a proximal end of the electrode array into the a distal end of the guiding tube, the guiding tube serving the function of holding the electrode array as the electrode array is inserted into the cochlea.